II. **Remark by S. H. WRIGHT, M. D., M. A., Ph. D., Penn Yan, New York.**

Mr. Adcock's problem asserts the truth evidently, when regular plane surfaces are considered, such as the square, rectangle, parallelogram, rhombus, the circle, and *equilateral polygons.* I hardly believe the problem will apply to *any irregular* figure.

III. **Comment, etc., by O. W. ANTHONY, M. Sc., Professor of Mathematics in New Windsor College, New Windsor, Maryland.**

It is evidently meant that when the sum of the squares of the distances of a point from all other points is a minimum the point is the *c. g.* of the surface. It can easily be proved that the other is not true.

[If Prof. Anthony will furnish a proof that the proposition does not hold for *any or all figures* we will be glad to publish it. We append Prof. Anthony's proof of the well-known proposition which he quotes. EDITOR.]

[The sum of the squares of the distances of a point (h, k) from all other points in the surface is $u=\int\int\left[(x-h)^2+(y-k)^2\right]dxdy$, where the integration is over the entire surface. For minimum, $\frac{du}{dh}=0$, $\frac{du}{dk}=0$. i.e.,

$$\int\int(x-h)dxdy=0, \text{ and} \int\int(y-k)dxdy=0;$$

$$\text{Whence } h=\frac{\int\int xdxdy}{\int\int dxdy}, \text{ and } k=\frac{\int\int ydxdy}{\int\int dxdy}.$$

That is (h, k) is the center of gravity of the surface.]

NOTE. In Prof. Ross' problem in September-October No., p. 291, read "*square* field ABC" instead of "*rectangular* field;" also insert "irregular" before the second "plane curve" in line 2 of Prof. Taylor's problem, and read "distance" for "distances" and $(C)=h$ for $(C=h)$ in line 5 of same problem.

PROBLEMS.

35. **Proposed by WILLIAM SYMMONDS, A. M., Professor of Mathematics and Astronomy in Pacific College, Santa Rosa, California; P. O., Sebastopol, California.**

To an observer whose latitude is 40 degrees north, what is the sidereal time when Fomalhout and Antares have the same altitude: taking the Right Ascension and Declination of the former to be 22 hours, 52 minutes, —30 degrees, 12 minutes; of the latter 16 hours, 23 minutes, —26 degrees, 12 minutes?

36. **Proposed by J. K. ELLWOOD, A. M., Principal of the Colfax School, Pittsburg, Pennsylvania.**

"What is the length of a chord cutting off one-fifth of the area of a circle whose diameter is 10 feet?"

37. **Proposed by F. M. SHIELDS, Coopwood, Mississippi.**

A gentleman owned and lived in the center, R, of a rectangular tract of land whose diagonal, D, 350 rods, dividing the tract into two equal right-angled triangles, in each of which is inscribed the largest square field, F and F, possible; the north and south boundary lines of the two square fields being extended and joined formed a little rectangular lot,

R, in the center around the residence. The difference in the area of the *entire rectangular* tract and the *sum* of the areas of the two square fields, F, F, is $187\frac{1}{2}$ acres. Give the dimensions and area of the entire tract, and one square field, F.

QUERIES AND INFORMATION.

Conducted by J. M. COLAW, Monterey, Va. All contributions to this department should be sent to him.

A POSTULATE OF THE HYPOTHESIS OF THE FOURTH DIMENSION.

Let it be granted that a straight line may be drawn through any point of the space in which our universe is contained, every other point of the supposed straight line being outside of our space.

This is *a postulate* logically involved in Arthur Willink's speculation respecting a fourth direction. He says that the fourth direction is *unknown.* He reasons that this could not be if two points in the fourth direction were posited in our space, since two given points in a straight line determine its position, and its direction becomes known.

According to Arthur Willink the direction of the fourth dimension is *unknown.* Hence, the fourth dimension can intersect our space in but *one* point. Hence, every other point on the hypothetical fourth dimensional straight line except that of the intersection must lie outside of our trinally extended space. Practically to the denizens of our universe that means that a straight line may be drawn where our space is not. This hypothesis of a fourth dimension, therefore, places restrictions upon the extent of our space, whereas no ultimate boundary is assigned to it by either the intellect or the imagination of man. The human mind reports as the result of its cognition *one illimitable space.* The hypothesis of another and a wider space is inconsistent with this cognition.

Let us view this subject in another light. Three straight lines mutually perpendicular to each other may be drawn through any point in our space, and hence through the point in which the fourth dimension is supposed to intersect it. The third dimension is perpendicular to the plane of the first and second dimensions. If this plane is definitely located, the direction of the third dimension is determined. Is the fourth dimension, also, at right angles to this plane? If so it must coincide with the third dimension and therefore lie in our space. But this conclusion contradicts the hypothesis that the fourth dimension is not in our space.

Finally, if the alleged fourth dimension is not perpendicular to the plane of the first and second dimensions is it a *legitimate* dimension?

JOHN N. LYLE.